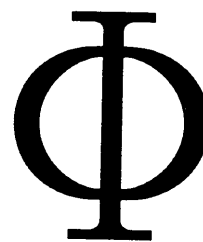
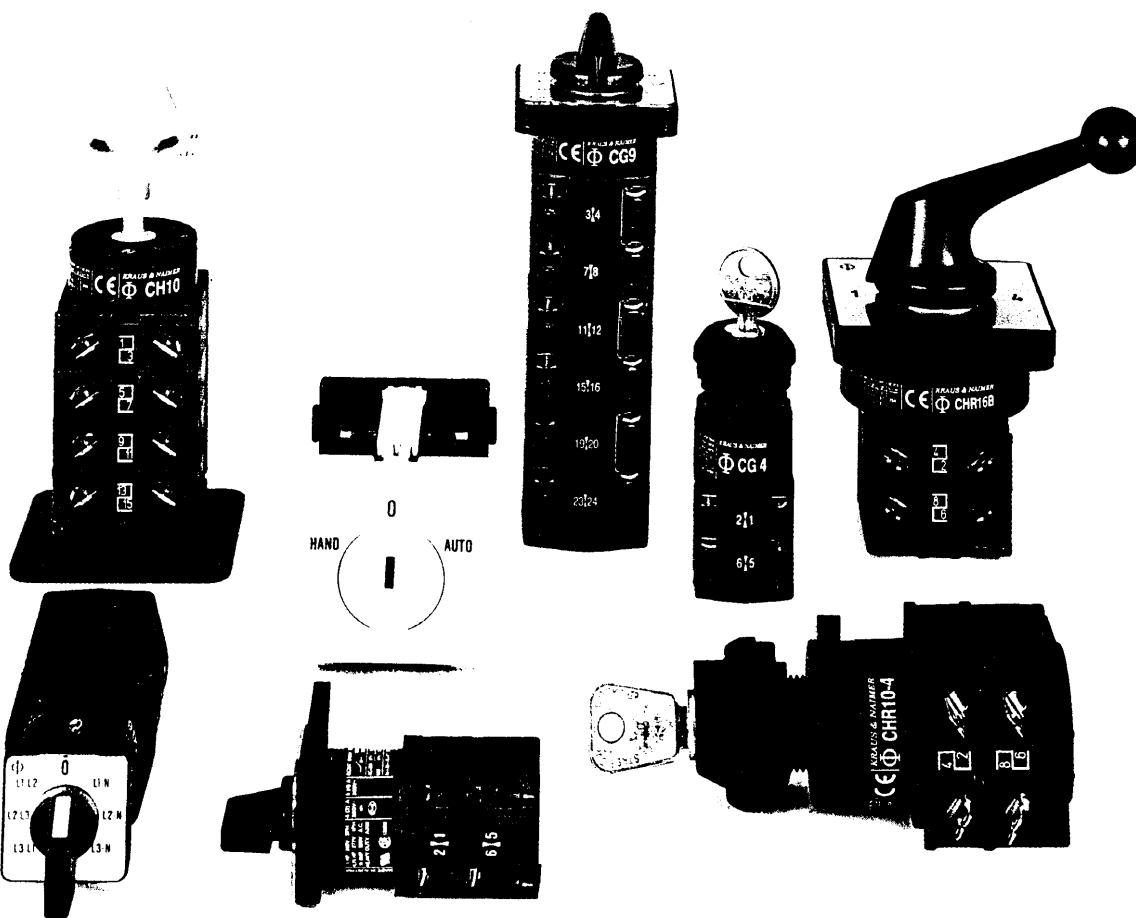


**KRAUS & NAIMER**  
**BLUE LINE SWITCHGEAR**



**Catalog 120**  
**CG, CH, CHR Switches**  
**10 A-25 A**



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# KRAUS & NAIMER

*The development of the Blue Line rotary switch, contactor and motor starter product ranges is based on more than seventy-five*

*years experience by Kraus & Naimer in the design and manufacture of electrical switchgear. Kraus & Naimer pioneered the introduction of the cam operated rotary switch and continues to be recognized as the world leader in that product field.*

## BLUE LINE

*Blue Line products are protected by numerous patents throughout*

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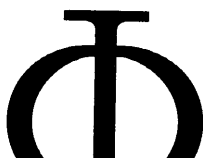
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*out the industrial world. They are built to national and international standards and designed to withstand adverse temperatures and climates.*

*Blue Line products are accepted and universally recognized for their quality and workmanship. They are supported by a worldwide sales and service organization.*

*The Kraus & Naimer Registered Trademark*



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Disconnectors and Main Switches acc. to IEC 60947-3 see Catalog 500

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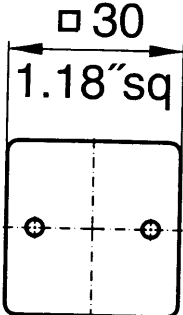
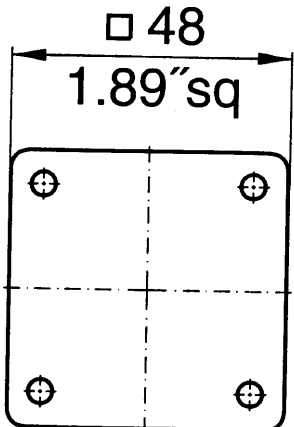
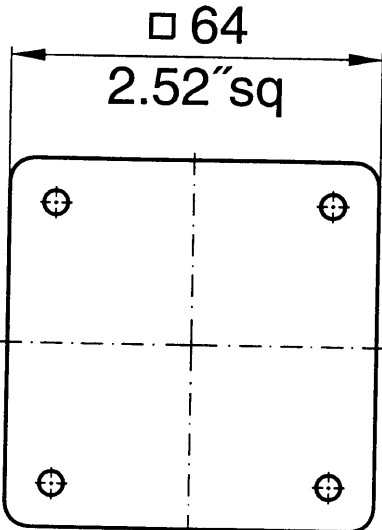
## Construction Data

Cam switches of the CG, CH and CHR-series are designed for universal application and may ideally be used for control switches, instrumentation switches, contactors, relays, etc.

switches closely, side by side, or to mount them directly at the cable trays. The contact terminal numbers are easy to



## Nominal Ratings

Switch Size	Type	According to IEC 60947-3, EN 60947-3, VDE 0660 part 107			
		Operational Voltage <sup>1</sup> $U_e$ V	Thermal Current $I_U/I_{th}$ A	Motor Rating 3 x 380 V-440 V AC-23A AC-3 kW kW	
<b>S00</b> 	<b>CG4</b>	440	10	3	2,2
	<b>CG4-1</b>	440	10	3	2,2
	<b>CGD4-1</b>	440	5	-	-
	<b>CG6</b>	690	20	7,5	5,5
	<b>CG7</b>	690	20	7,5	5,5
<b>S0</b> 	<b>CG8</b>	690	20	7,5	5,5
	<b>CG9</b>	690	20	7,5	5,5
	<b>CH10</b>	690	20	7,5	5,5
	<b>CH11</b>	600	6	-	-
	<b>CH12</b>	600	6	-	-
	<b>CH16</b>	690	25	11	7,5
	<b>CHR10</b>	690	20	7,5	5,5
	<b>CHR11</b>	600	6	-	-
	<b>CHR12</b>	600	6	-	-
	<b>CHR16</b>	690	25	11	7,5
<b>S1</b> 	<b>CH10B</b>	690	20	7,5	5,5
	<b>CH16B</b>	690	25	11	7,5
	<b>CHR10B</b>	690	20	7,5	5,5
	<b>CHR16B</b>	690	25	11	7,5

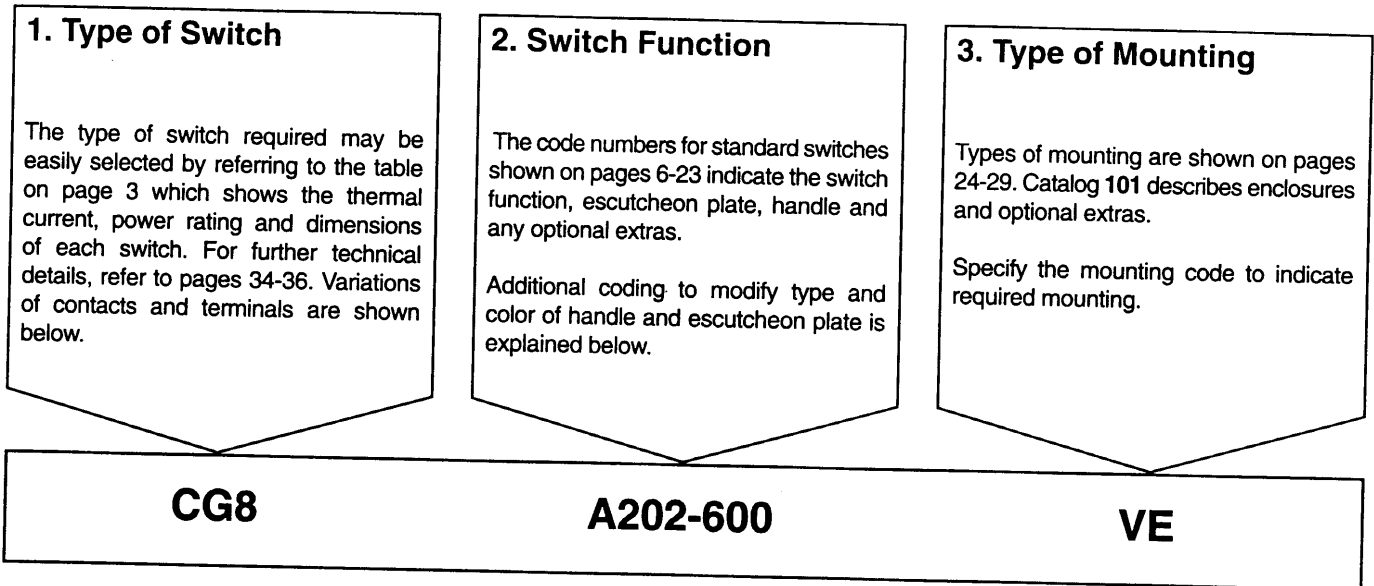
For further technical details, refer to pages 34-36.

<sup>1</sup>Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.

## How to order

Disconnectors and Main Switches according to IEC 60947-3 see Catalog 500

Three types of data (shown below) are required for ordering Blue Line cam-operated switches. Code numbers for ordering are shown in this catalog.



### Type of Switch

Extending the switch type coding the following combinations will define:

Amendment	Definition	For switch types
-1	with gold contacts	CH10, CHR10, CH10B, CHR10B
-4	with quick connects (nickel-plated)	CHR10, CHR16, CHR10B, CHR16B
-6	with angled quick connects (nickel-plated)	CHR10, CHR16, CHR10B, CHR16B
B	S0 switches with latching mechanism size S1	CG8, CG9, CH10, CH16, CHR10, CHR16 for four hole panel mounting
L	with lockout-relay w/o manual release	CG8, CG9, CH10, CH16, CHR10, CHR16
M	with lockout-relay with manual release	CG8, CG9, CH10, CH16, CHR10, CHR16
X	with power failure release	CG8, CG9, CH10, CH16, CHR10, CHR16
S	with snap action	CG8, CG9, CH10, CH16, CHR10, CHR16 with 60° switching

**Example:** Coding for switch type **CG8** with latching mechanism size S1 is **CG8B**.

### Modification of Switches

The part number for switch function and options may be modified in cases where items are required other than standard. The modification may involve the escutcheon plate inscription, color combination of escutcheon plate and handle, type of escutcheon plate and handle or the optional extra.

Switch Size	Escutcheon Plate Frame	Handle	Escutcheon Plate Backing	Escutcheon Plate Lettering	Dash Number
S0, S1	electro-gray	electro-gray	brushed alu	black	-100
S0, S1	electro-gray	electro-gray	black	mat silver	-500
S00, S0, S1	black	black	brushed alu	black	-600
S00, S0, S1	black	black	black	mat silver	-700



# Switch Function and Configuration

## CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

### ON/OFF Switches with 60° Switching

1 pole						A200-600	1	
2 pole						A201-600	1	
3 pole						A202-600	2	
3 pole with red handle						A202-626	2	
3 pole with V850 padlock attachment						A202-627	2	
4 pole						A203-600	2	
5 pole						A341-600	3	
6 pole						A342-600	3	
7 pole						A343-600	4	
8 pole						A344-600	4	
9 pole						A345-600	5	
10 pole						A346-600	5	
11 pole					A347-600	6		
12 pole					A348-600	6		
1 pole						A200-620	1	
2 pole						A201-620	1	
3 pole						A202-620	2	
4 pole						A203-620	2	
5 pole						A341-620	3	
6 pole						A342-620	3	
7 pole						A343-620	4	
8 pole						A344-620	4	
9 pole						A345-620	5	
10 pole						A346-620	5	
11 pole						A347-620	6	
12 pole						A348-620	6	
1 pole						A200-621	1	
2 pole						A201-621	1	
3 pole						A202-621	2	
4 pole						A203-621	2	
5 pole						A341-621	3	
6 pole						A342-621	3	
1 pole						A200-622	1	
2 pole						A201-622	1	
3 pole						A202-622	2	
4 pole						A203-622	2	
5 pole						A341-622	3	
6 pole						A342-622	3	
1 pole						A200-623	1	
2 pole						A201-623	1	
3 pole						A202-623	2	
4 pole						A203-623	2	
5 pole						A341-623	3	
6 pole						A342-623	3	
1 pole						A200-624	1	
2 pole						A201-624	1	
3 pole						A202-624	2	
4 pole						A203-624	2	
5 pole						A341-624	3	
6 pole						A342-624	3	
1 pole						A200-625	1	
2 pole						A201-625	1	
3 pole						A202-625	2	
4 pole						A203-625	2	
5 pole						A341-625	3	
6 pole						A342-625	3	



# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## ON/OFF Switches with 90° Switching

1 pole contacts 2 pole preclose 30° 3 pole						A290-600 A291-600 A292-600	1 1 2	<p>1, 2, 3, 4, 5 and 6 pole</p>	
4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°						A324-600 A293-600 A327-600	2 2 2		
5 pole contacts 6 pole preclose 30°						A325-600 A326-600	3 3		
1 pole contacts 2 pole preclose 30° 3 pole						A290-620 A291-620 A292-620	1 1 2		<p>4 pole 1 pole preclose 60°</p>
4 pole 4 pole 1 pole preclose 60° 4 pole 3 pole preclose 30°						A324-620 A293-620 A327-620	2 2 2		
5 pole contacts 6 pole preclose 30°						A325-620 A326-620	3 3	<p>4 pole 3 pole preclose 30°</p>	
3 pole 360° rotation						A208-600 A208-620	2 2		
3 pole for foot operation						A386-600	2		

## ON/OFF Switches with 30° Switching

1 pole 2 pole 3 pole 4 pole						A100-600 A101-600 A102-600 A103-600	1 1 2 2	<p>1-4 pole</p>
1 pole with spring return 2 pole with spring return 3 pole with spring return 4 pole with spring return						A204-600 A205-600 A206-600 A207-600	1 1 2 2	<p>1-4 pole</p>
1 pole with spring return 2 pole with spring return 3 pole with spring return 4 pole with spring return						A204-620 A205-620 A206-620 A207-620	1 1 2 2	

<sup>1</sup>available as switch types CH16B and CHR16B

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

**Double-throw Switches without „OFF“ 60° Switching**

1 pole						A220-600	1	
2 pole						A221-600	2	
3 pole						A222-600	3	
4 pole						A223-600	4	
5 pole						A369-600	5	
6 pole						A370-600	6	
7 pole						A371-600	7	
8 pole						A372-600	8	
9 pole						A373-600	9	
10 pole						A374-600	10	
11 pole						A375-600	11	
12 pole						A376-600	12	

**Double-throw Switches without „OFF“ with electrically isolated contacts**

1 pole						A720-600	1	
2 pole						A721-600	2	
3 pole						A722-600	3	
4 pole						A723-600	4	
1 pole with spring return						A795-600	1	

**Double-throw Switches without „OFF“ 30° Switching**

1 pole						A120-600	1	
2 pole						A121-600	2	
3 pole						A122-600	3	
4 pole						A123-600	4	
1 pole with spring return						A295-600	1	
2 pole with spring return						A296-600	2	
3 pole with spring return						A297-600	3	
1 pole with spring return						A295-620	1	
2 pole with spring return						A296-620	2	
3 pole with spring return						A297-620	3	

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## Double-throw Switches with Center „OFF“ 60° Switching

1 pole						A210-600	1	
2 pole						A211-600	2	
3 pole						A212-600	3	
4 pole						A213-600	4	
5 pole						A361-600	5	
6 pole						A362-600	6	
7 pole						A363-600	7	
8 pole						A364-600	8	
1 pole						A210-621	1	
2 pole						A211-621	2	
3 pole						A212-621	3	
1 pole						A210-622	1	
2 pole						A211-622	2	
3 pole						A212-622	3	
1 pole						A210-623	1	
2 pole						A211-623	2	
3 pole						A212-623	3	
1 pole						A210-624	1	
2 pole						A211-624	2	
3 pole						A212-624	3	
4 pole						A213-624	4	

## Double-throw Switches with Center „OFF“ 90° Switching

1 pole contacts						A218-600	1	
2 pole preclose 30°						A219-600	2	
3 pole						A299-600	3	
4 pole 1 pole preclose 60°						A294-600	4	
1 pole						A218-620	1	
2 pole						A219-620	2	
3 pole						A299-620	3	
4 pole 1 pole preclose 60°						A294-620	4	

## Double-throw Switches with Center „OFF“ and electrically isolated contacts

1 pole						A710-600	1	
2 pole						A711-600	2	
3 pole						A712-600	3	
4 pole						A713-600	4	
1 pole with spring return						A714-600	1	
2 pole to center						A715-600	2	

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## Double-throw Switches with Spring Return to Center

1 pole with spring return to center					A214-600 A215-600 A216-600	1 2 3	<p>1-3 pole</p>
2 pole					A214-620 A215-620 A216-620	1 2 3	
3 pole					A214-620 A215-620 A216-620	1 2 3	
1 pole with spring return from left to center					A320-600 A321-600 A322-600	1 2 3	<p>1-3 pole</p>
2 pole					A320-621 A321-621 A322-621	1 2 3	
3 pole					A320-621 A321-621 A322-621	1 2 3	

## General Application Switches

1 pole 2 Gang					A310-600 A312-600 A314-600	1 2 3	<p>1 pole</p> <p>2 pole</p>						
2 pole Switching sequence: 0, A, A+B											A310-620 A312-620 A314-620	1 2 3	<p>3 pole</p>
3 pole													
1 pole 3 Gang					A311-600 A313-600 A315-600	2 3 5	<p>1 pole</p> <p>2 pole</p>						
2 pole Switching sequence: 0, A, A+B, A+B+C											A311-620 A313-620 A315-620	2 3 5	<p>3 pole</p>
3 pole													
1 pole 2 Gang Series switching					A330-600 A331-600 A332-600	1 2 3	<p>1 pole</p> <p>2 pole</p>						
2 pole Switching sequence: 0, A, B, A+B											A330-620 A331-620 A332-620	1 2 3	<p>3 pole</p>
3 pole													
2 pole 2 Gang Series-parallel Switching					A339-600	2							
Switching sequence: 0, A+B series, A, A+B parallel												A339-620	2

# Switch Function and Configuration

## CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CH11 CH12	CH10B- CHR16B			

### Coding Switches/Binary Code

0 - 7					A540-600	2	
0 - 7 complement					A541-600	2	
0 - 7 + complement					A542-600	3	
0 - 9					A550-600	2	
0 - 9 complement					A551-600	2	
0 - 9 + complement					A552-600	4	
0 - 11					A543-600	2	
0 - 11 + complement					A545-600	4	

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## Multi-step Switches without „OFF“

1 pole 3 Step 2 pole 3 pole 4 pole 5 pole 6 pole						A230-600 A250-600 A270-600 A476-600 A484-600 A489-600	2 3 5 6 8 9	
1 pole 4 Step 2 pole 3 pole 4 pole 5 pole 6 pole						A231-600 A251-600 A271-600 A477-600 A485-600 A490-600	2 4 6 8 10 12	
1 pole 5 Step 2 pole 3 pole 4 pole						A232-600 A252-600 A272-600 A478-600	3 5 8 10	
1 pole 6 Step 2 pole 3 pole						A233-600 A253-600	3 6	

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## Multi-step Switches without „OFF“ with electrically isolated contacts

1 pole 3 Step						A730-600	2	 1 pole
2 pole						A750-600	3	 2 pole
1 pole 4 Step						A731-600	2	 1 pole
2 pole						A751-600	4	 2 pole

## Multi-step Switches with „OFF“

1 pole 2 Step						A240-600	1	 1-6 pole
2 pole						A260-600	2	
3 pole						A280-600	3	
4 pole						A480-600	4	
5 pole						A486-600	5	
6 pole						A491-600	6	
1 pole 3 Step						A241-600	2	 1 and 2 pole
2 pole						A261-600	3	
3 pole						A281-600	5	
4 pole						A481-600	6	
5 pole						A487-600	8	
1 pole 2 Step							A241-620	
2 pole						A261-620	3	
3 pole						A281-620	5	
4 pole						A481-620	6	 4 pole
5 pole						A487-620	8	
1 pole 2 Step						A241-621	2	 4 pole
2 pole						A261-621	3	
1 pole 2 Step								 5 pole

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

Multi-step Switches with „OFF“

1 pole 4 Step 2 pole 3 pole 4 pole						A242-600 A262-600 A282-600 A482-600	2 4 6 8	
1 pole 2 pole 3 pole 4 pole						A242-620 A262-620 A282-620 A482-620	2 4 6 8	
1 pole 5 Step 2 pole 3 pole						A243-600 A263-600 A283-600	3 5 8	
1 pole 2 pole 3 pole						A243-620 A263-620 A283-620	3 5 8	
1 pole 6 Step 2 pole 3 pole						A244-600 A264-600 A284-600	3 6 9	
1 pole 2 pole 3 pole						A244-620 A264-620 A284-620	3 6 9	
1 pole 7 Step 2 pole						A245-600 A265-600	4 7	
1 pole 2 pole						A245-620 A265-620	4 7	
1 pole 8 Step						A246-600	4	
1 pole						A246-620	4	
1 pole 9 Step						A247-600	5	
1 pole						A247-620	5	
1 pole 10 Step						A248-600	5	
1 pole						A248-620	5	
1 pole 11 Step 1 pole without stop						A249-600 A649-600	6 6	
1 pole 1 pole without stop						A249-620 A649-620	6 6	



# Switch Function and Configuration

## CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

### Voltmeter Switches without „OFF“

3 phase 3 wire							A023-600	2	
	A023-620	2							
3 phase 3 wire 3 phase to phase and phase to neutral							A025-600	3	
	A025-620	3							

### Voltmeter Switches with „OFF“

2 pole 360° rotation							A002-600	1	
3 phase 3 wire							A004-600	2	
	A004-620	2							
	A004-621	2							
	A004-622	2							
	A004-623	2							
	A004-624	2							
	A011-600	2							

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## Voltmeter Switches with „OFF“

3 phase to neutral						A005-600	2	
						A005-620	2	
						A005-621	2	
						A005-622	2	
						A005-623	2	
3 phase to phase and 3 phase to neutral						A007-600	3	
						A007-620	3	
						A007-621	3	
						A007-622	3	
						A007-623	3	
2 separate 3 phase with center „OFF“						A008-600	4	
						A008-620	4	
						A008-621	4	
						A008-622	4	

# Switch Function and Configuration

## CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

### Voltmeter Switches with „OFF“

3 phase and 1 phase to neutral						A010-600	3	
						A010-620	3	
						A010-621	3	
						A010-622	3	

### Ammeter Switches

Single pole with one current transformer						A046-600	1	
						A046-620	1	
						A046-621	1	
Single pole with 3 current transformers without „OFF“						A017-600	3	
						A017-620	3	
Single pole with 3 current transformers with „OFF“ 360° rotation						A048-600	3	
						A048-620	3	
						A048-621	3	
						A048-622	3	
						A048-623	3	

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## Ammeter Switches

Single pole with 2 current transformers (3 readings)						A021-600	2	
						A021-620	2	
Single pole with 4 current transformers						A036-600	4	
						A036-620	4	
2 pole 2 current transformers						A037-600	3	
						A037-620	3	
						A037-621	3	
2 pole 3 current transformers						A019-600	5	
						A019-620	5	
						A038-600	5	
2 pole 4 current transformers						A038-600	5	
						A038-620	5	
						A038-621	5	
2 pole 4 current transformers						A039-600	6	
						A039-620	6	

# Switch Function and Configuration

## CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

### Volt-ammeter Switches

3 phase - phase to phase 3 current						A027-600	6	
						A028-600	7	
3 phase voltage 3 phase current 4 wire						A033-600	5	
3 phase voltage 3 phase current 3 wire						A035-600	5	

### Control Switches

Stop switch						A174-600	1	
Start switch						A175-600	1	
Stop start switch single pole						A176-600	1	
Stop start switch 2 pole						A183-600	2	
Stop start switch with spring return from start to run						A178-600	1	
						A178-620	1	
Stop start switch with spring return to run for 2 units						A177-600	2	
						A177-620	2	

Function	Escutch. Plate	Type/Handle	Code	Stages	Connection Diagram
		CG4- CG6 CG8- CH10B- CGD4-1 CG7 CHR16 CHR16B			

Control Switches

Stop start switch with spring return to run with contactor interlock contactors for 2 units						A182-600	2	
						A182-620	2	
Motor voltage control switch						A150-600	2	

Control Switches with electrically isolated contacts

Stop start switch						A789-600	1	
Stop start switch with spring return to 1						A791-600	1	
Stop start switch with spring return to run for 2 units						A790-600	2	
Contactor control with spring return to „OFF“						A179-600	2	
						A179-620	2	
Circuit breaker control						A537-600	2	

Control and Alarm Switches<sup>1</sup>

With slip clutch and without indicator device						A190-600	5 <sup>2</sup>	
Without indicator device						A192-600	2	

<sup>1</sup>Advise the indicator device Q110/F, described in Catalog 101, page 7. <sup>2</sup>incl. slip clutch

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

## Motor Reversing Switches

2 pole						A400-600	2	
						A400-620	2	
						A400-621	2	
3 pole						A401-600	3	
						A401-620	3	
						A401-621	3	
3 pole with spring return to „OFF“						A228-600	3	
						A228-620	3	
3 pole for use with reversing contactors						A402-600	4	

## Motor Control Switches






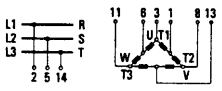










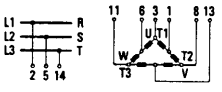
2 speed 2 winding 0-A-BY or Δ						A451-600	3	
						A451-620	3	
3 speed 2 winding 0-AΔ-BY-AΥ						A457-600	6	
						A457-620	6	

# Switch Function and Configuration

# CG, CH, CHR Switches

Function	Escutch. Plate	Type/Handle CG4- CG6 CG8- CH10B- CGD4-1 CG7 CHR16 CHR16B	Code	Stages	Connection Diagram
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## Motor Control Switches

2 speed single winding						A440-600	4	
						A440-620	4	
2 speed single winding without „OFF“						A466-600	4	



Function	Escutch. Plate	Type/Handle				Code	Stages	Connection Diagram
		CG4- CGD4-1	CG6 CG7	CG8- CHR16	CH10B- CHR16B			

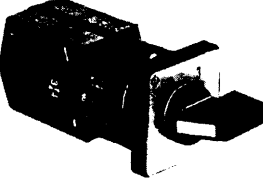
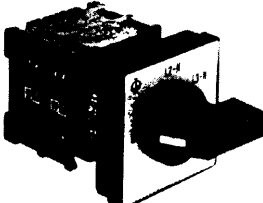
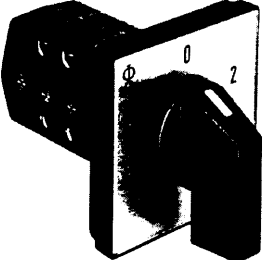
Star-delta Switches

OFF-star-delta						A410-600	4	
						A410-620	4	
Reversing						A413-600	5	
With auxiliary contact closed in „OFF“ position						A416-600	5	
For use with reversing contactors						A419-600	4	

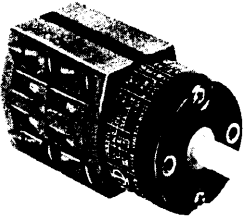
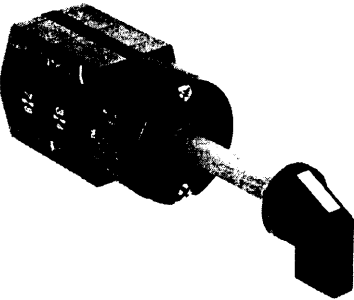
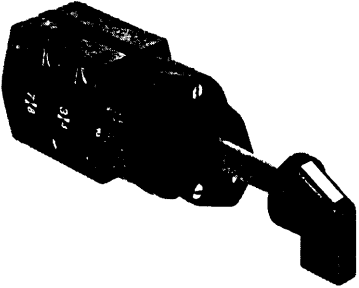
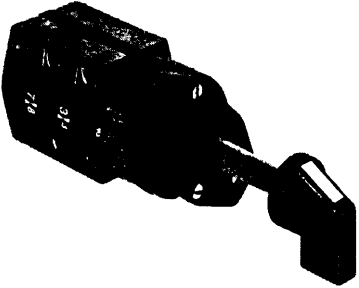
Start and Run Switches

Split-phase start						A425-600	2	
						A425-620	2	
Split-phase start reversing						A426-600	3	
						A426-620	3	
Split-phase reversing auto cutout of start field winding						A622-600	3	

Two- or Four Hole Panel Mounting	Terminals rotated 90° clockwise	Code	CG4-CG7	CG8-CHR16	CH10B-CHR16B
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	<p>Panel mounting</p> <p>Two hole panel mounting</p> <p>Two hole panel mounting, protection IP 65</p>	<p>●</p> <p>●</p>	<p>E</p> <p>E-V</p> <p>EF</p> <p>EF-V</p>	<p>●</p> <p>●</p> <p>●</p> <p>●</p>		
	<p>Four hole panel mounting</p> <p>Four hole panel mounting, protection IP 65</p> <p>Two hole panel mounting, protection IP 65</p>	<p>●</p> <p>●</p> <p>●</p>	<p>E</p> <p>E-V</p> <p>EF</p> <p>EF-V</p> <p>E22</p> <p>E22-V</p>	<p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>●</p> <p>●</p>	<p>●</p> <p>●</p> <p>●</p>	<p>●</p> <p>●</p> <p>●</p>
	<p>Panel mounting using larger escutcheon plate and handle and with heavy duty latching</p> <p>Four hole panel mounting</p> <p>Four hole panel mounting, protection IP 65</p>		<p>EG</p> <p>EGF</p>	<p>●</p> <p>●</p>		

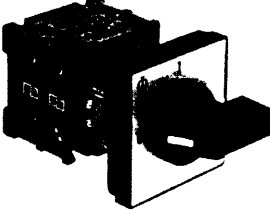
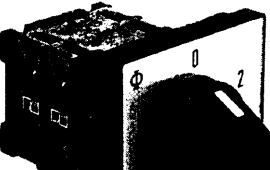

Two Hole Panel Mounting or Mosaic Mounting	Code	CG4- CG7
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	<p>Panel mounting with round shaft for combining with commercial radio knobs</p> <p>Two hole panel mounting Shaft diam. 6 mm/.24 inch</p> <p>Two hole panel mounting Shaft diam. 6,35 mm/.25 inch</p>	E9	●
	<p>Mosaic mounting</p> <p>For Siemens-Mosaic 30 mm grid depth</p>	E91	●
	<p>For Subklew-, Kreutzenbeck-, Symo-Mosaic 28 mm    25 mm    25 mm grid depth</p>	E92	●
	<p>For Mauell-Mosaic 30 mm grid depth</p>	E93	●
		E94	●

Mounting

CG, CH, CHR Switches

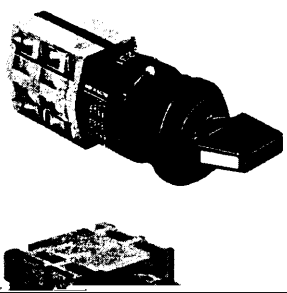
Two- or Four Hole Panel Mounting	<b>Code</b>	CG8-CHR16	CH10B-CHR16B
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	<p>Panel mounting with heavy duty latching and metal shaft</p> <p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size S0</p>	KN2	●	
	<p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size S1</p>	KN1	●	●
	<p>Four hole panel mounting Mounting plate, escutcheon plate and handle of size S1 and 6 mm square metal shaft</p>	KD1	●	●
	<p>Panel mounting with protective cover</p>			
	<p>Four hole panel mounting</p>	EC	CH	●

# Mounting

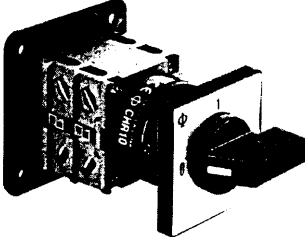
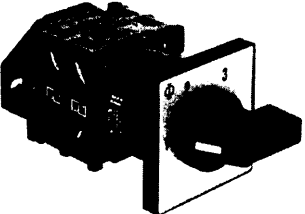
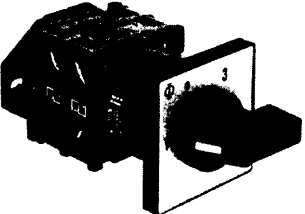
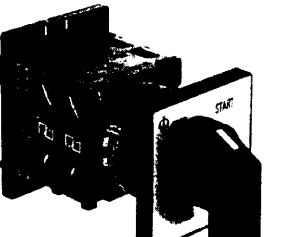
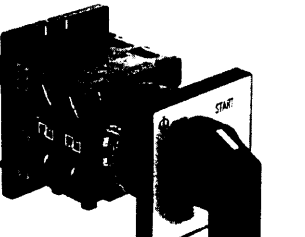
# CG, CH, CHR Switches

Single Hole Mounting	Terminals rotated 90° clockwise	<b>Code</b>	CG4- CG7	CG8- CHR16
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 <p>With locking nut and shaft seal, protection IP 65</p> <p>Without escutcheon plate</p>	●	FS1 FS1-V	mm 16/22 16/22	mm  22
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ET1


Base Mounting	Terminals rotated 90° clockwise	Code	CG8-CHR16
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Base mounting			Code	
	<p>For four hole panel mounting</p>	●	VE VE-V	● ●
	<p>For four hole panel mounting and with integrated simplified door clutch, protection IP 65</p>	●	VF VF-V	● ●
	<p>For two hole panel mounting</p>	●	VE22 VE22V	● ●
	<p>For two hole panel mounting and with integrated simplified door clutch, protection IP 65</p>	●	VF22 VF22V	● ●
	<p>Snap-on base mounting for track EN 50022.</p>		VE1	●

# Mounting

# CG, CH, CHR Switches

<b>Base Mounting</b>	<b>Code</b>	CG4- CGD4-1	CG8- CHR16
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 <p data-bbox="518 472 703 501">Base mounting</p> <p data-bbox="518 600 1161 667">Snap-on base mounting for track EN 50022 with rectangular escutcheon plate for 45 mm standard knock-out.</p>	VE2		●
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# Escutcheon Plates

## 60° switching

F070	F072	F087	F088	F089	F133	F163	F164	F192	F193	F196	F197	F198	F230	F231	F232	F234	F243
F244	F247	F257	F262	F263	F264	F268	F282	F288	F470	F291	F310	F311	F313	F323	F328	F352	F367
F379	F380	F382	F705	F721	F722	F750	F754	F071	F073	F075	F076	F080	F081	F085	F086	F090	F091
F092	F093	F094	F098	F104	F194	F220	F223	F235	F237	F239	F240	F241	F249	F260	F269	F274	F281
F290	F292	F312	F314	F315	F316	F324	F331	F344	F354	F356	F357	F358	F359	F364	F370	F371	F373
F377	F381	F385	F723	F732	F735	F077	F100	F101	F102	F309	F342	F343	F361	F362	F363	F365	F366
F074	F078	F082	F096	F097	F191	F195	F256	F325	F326	F720	F724	F079	F083	F084	F095	F099	F185
F190	F199	F233	F236	F238	F242	F283	F725	F730	F731	F736	F737						




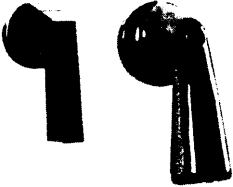

## 90° switching





F056	F058	F063	F065	F068	F069	F134	F177	F178	F182	F201	F208	F251	F252	F253	F254	F340	F346
F360	F378	F456	F458	F700	F743	F057	F061	F064	F067	F171	F181	F205	F207	F209	F320	F349	F715
F719	F059	F060	F062	F066	F170	F172	F173	F174	F175	F176	F179	F180	F186	F188	F202	F204	F206
F719	F059	F060	F062	F066	F170	F172	F173	F174	F175	F176	F179	F180	F186	F188	F202	F204	F206

# Handles













Type	Color	Code	Size		
			S00	S0	S1

Type	Color	Code	Size		
			S00	S0	S1

<b>R-Handle</b>  S0	black red white electro-gray	G001 G002 G003 G007	— — — —	● ● ● ●	● ● ● ●
<b>F-Handle</b>  S0	black red white electro-gray	G221 G222 G223 G227	● ● ● ●	● ● ● ●	● ● ● ●
<b>S-Handle</b>  S0      S1	black red white electro-gray	G301 G302 G303 G307	— — — —	● ● ● ●	● ● ● ●
<b>P-Handle</b>  S0      S1	black red white electro-gray	G211 G212 G213 G217	— — — —	● ● ● ●	● ● ● ●
<b>O-Handle</b> 	black red white electro-gray	G321 G322 G323 G327	— — — —	— — — —	● ● ● ●

<b>I-Handle</b>  S00      S0, S1	black red white electro-gray	G251 G252 G253 G257	● ● ● ●	● ● ● ●	● ● ● ●
<b>B-Handle</b> 	black red white electro-gray	G521 G522 G523 G527	— — — —	● ● ● ●	● ● ● ●
<b>L-Handle</b> 	black red white electro-gray	G501 G502 G503 G507	— — — —	— — — —	● ● ● ●
<b>K-Handle</b> 	black red white electro-gray	G411 G412 G413 G417	— — — —	— — — —	● ● ● ●

## International Standards and Approvals

Country	Authority	Mark or Standard	CG4	CG4-1	CG6	CG7	CG8	CG9	CH10 CH10B	CH16 CH16B	CHR10 CHR10B	CHR16 CHR16B	
			USA	Underwriters Laboratories	 <sup>1</sup>	●	●						
	 <sup>4</sup>				●	●	●	●	●	●			
Canada	Canadian Standards Association	 <sup>5</sup>	●	●	●	●	●	●		●	●	●	●
Switzerland	Schweizerischer Elektrotechnischer Verein		●	●	●	●	●	●	+	+	+	+	
Denmark	Danmarks Elektriske Materielkontrol		+	+	+	+	+	+	+	+	+	+	
Norway	Norges Elektriske Materielkontrol		●	+	●	+	●	+	+	+	+	+	
Sweden	Svenska Elektriska Materielkontrollanstalten		+	+	+	+	+	+	+	+	+	+	
Finland	Sähkötar-kastuskeskus		+	+	+	+	+	+	+	+	+	+	
Austria	Österreichischer Verband für Elektrotechnik		+	+	+	+	+	+	+	+	+	+	
Federal Republic of Germany	Verband Deutscher Elektrotechniker	VDE 0660 <sup>2</sup>	+	+	+	+	+	+	+	+	+	+	
Great Britain	British Standards Institution	BS EN 60947 <sup>2</sup>	+	+	+	+	+	+	+	+	+	+	
Europe		EN 60947 <sup>3</sup>	+	+	+	+	+	+	+	+	+	+	
International Electrical Commission (IEC) Recommendation		IEC 60947 <sup>3</sup>	+	+	+	+	+	+	+	+	+	+	
Germanischer Lloyd			+	+	+	+	+	+	+	+	+	+	
Lloyds Register of Shipping			+	+	+	+	+	+	+	+	+	+	
UdSSR Register of Shipping			●	●	●	●	●	●	+	+	+	+	
<p>● Switch approved</p> <p>+ Switch conforms to requirements</p> <p><sup>1</sup>Approved under the "Component Program" (UL-Recognized Industrial Component). File No. E35541, Guide No. NLRV2.</p> <p><sup>2</sup>Industrial switchgear is not required to bear a symbol but must conform to requirements. By referring to the specific specification on the product the manufacturer implies that these requirements have been met.</p> <p><sup>3</sup>IEC and EN don't operate an approval scheme.</p> <p><sup>4</sup>Approved under the "Listing-Program". File No. E35541, Guide No. NLRV.</p> <p><sup>5</sup>File No. 13002, Class No. 321105 resp. 465204.</p>													

<b>Selection Data</b>	CG4	CG6	CG7	CH10	CHR10	CH16	CHR16
	CG4-1	CG8	CG9	CH10B	CHR10B	CH16B	CHR16B

<b>Rated Insulation Voltage <math>U_n</math></b>	IEC 60947-3, EN 60947-3 <sup>1</sup> VDE 0660 part 107 <sup>1</sup>	V	440	690	690	690	690	690	690	
	SEV	max. V	400	690	690	—	—	—	—	
	UL/Canada <sup>2</sup>	V	300	300	600	600	600	600	600	
	CEE 24	V	380	380	380	—	—	—	—	
<b>Rated Impulse Withstand Voltage <math>U_{imp}</math><sup>1</sup></b>		kV	4	6	6	6	6	6	6	
<b>Rated Thermal Current <math>I_n/I_{th}</math></b>	IEC 60947-3, EN 60947-3 VDE 0660 part 107	A	10	20	20	20	20	25	25	
	SEV	max. A	10	20	20	—	—	—	—	
	UL/Canada	A	10	16	16	20	20	25	25	
<b>Rated Operational Current <math>I_n</math></b>										
AC-21A Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107	A	10	20	20	20	20	25	25	
AC-1 Resistive or low inductive loads	SEV	400 V	A	10	—	—	—	—	—	
		500 V	A	—	—	—	—	—	—	
		600 V	A	—	—	—	—	—	—	
AC-22A Switching of combined resistive or low inductive loads including moderate overloads	IEC 60947-3 VDE 0660, part 107	220 V-440 V	A	10	20	20	20	20	25	
		500 V	A	—	20	20	20	20	25	
		660 V-690 V	A	—	16	16	16	16	25	
AC-15 Switching of control devices, contactors, valves etc.	IEC 60947-3 VDE 0660, part 107	110 V	A	2,5	6	6	5	5	8	
		220 V-240 V	A	2,5	6	6	5	5	8	
		380 V-440 V	A	1,5	4	4	4	4	5	
Pilot Duty	UL/Canada <sup>2</sup>	Heavy	VAC	300	300	600	600	600	600	
Ampere Rating Resistive or low inductive loads	UL/Canada <sup>2</sup>	A	10	16 (150 V) 10 (300 V)	16	20	20	25	25	
Resistive load/Motor load	CEE 24 <sup>2</sup> NEMKO/FI <sup>2</sup>	A	4/2	10/6	10/6	—	—	—	—	
		A	6/4 <sup>4</sup>	10/6	—	—	—	—	—	
<b>Short Circuit Protection</b>										
Max. fuse size	(gL-characteristic)	A	10	25	25	25	25	35	35	
Rated short-time withstand current	(1s-current)	A	90	140	140	200	200	250	250	
<b>DC Switching Capacity</b>										
No. of series contacts	1 2 3 4 5 6 8									
	Voltage V									
Resistive loads T ≤ 1 ms	24 48 70 95 120 145 190	A	CG4 CG4-1	10	20	20	20	20	25	25
	48 95 140 190 240 290 350		CG6 CG8	6	12	16	12	12	20	20
	60 120 180 240 300 360 450		CG7 CG9	2,5	4,5	8	4,5	4,5	7,5	7,5
	110 220 330 440 550 660 —		CG8S <sup>3</sup> CG9S <sup>3</sup>	0,7	1	2	1	1	1,5	1,5
	220 440 660 — — — —		CH10 CH10B	0,3	0,4	0,6	0,4	0,4	0,5	0,5
	440 660 — — — — —		CHR10 CHR10B	0,2	0,27	0,35	0,27	0,27	0,3	0,3
Inductive loads T = 50 ms	24 48 70 95 120 145 190	A	CG4 CG4-1	6	12	20	12	12	20	20
	30 60 90 120 150 180 240		CG6 CG8	3	5	13	5	5	9	9
	48 95 140 190 240 290 350		CG7 CG9	1	2	6	2	2	3	3
	60 120 180 240 300 360 450		CG8S <sup>3</sup> CG9S <sup>3</sup>	0,7	1	3	1	1	1,5	1,5
	110 220 330 440 550 660 —		CH10 CH10B	0,3	0,4	1	0,4	0,4	0,5	0,5
			CHR10 CHR10B							
<b>Ambient Temperature of Stages</b>			55 °C during 24 hours with peaks up to 60 °C at 100 % load							

<sup>1</sup>Valid for lines with grounded common neutral termination, overvoltage category III, pollution degree 3. Values for other supply systems on request.  
<sup>2</sup>International Standards and Approvals, refer to page 33. <sup>3</sup>Valid only for max. 4 simultaneously opening contacts. <sup>4</sup>Valid for CG4 only.

<b>Selection Data</b>	CG4	CG6	CG7	CH10	CHR10	CH16	CHR16
	CG4-1	CG8	CG9	CH10B	CHR10B	CH16B	CHR16B

Rated Utilization Category		IEC 60947-3, EN 60947-3 VDE 0660 part 107										
AC-2	Slip ring motor starting, reversing and plugging, star-delta starting	3 phase	220 V-240 V	kW	2,5	4	4	4	4	5,5	5,5	
		3 pole	380 V-440 V		4,5	7,5	7,5	7,5	7,5	11	11	
			500 V		-	10	10	10	10	15	15	
			660 V-690 V		-	10	10	10	10	13	13	
AC-3	Direct-on-line starting, star-delta starting	3 phase	220 V-240 V	kW	1,5	3	3	3	3	4	4	
		3 pole	380 V-440 V		2,2	5,5	5,5	5,5	5,5	7,5	7,5	
			500 V		-	5,5	5,5	5,5	5,5	7,5	7,5	
			660 V-690 V	-	5,5	5,5	5,5	5,5	7,5	7,5		
			1 phase	110 V-120 V	kW	0,3	0,6	0,6	0,6	0,6	1,5	1,5
		2 pole	220 V-240 V	0,55		2,2	2,2	2,2	2,2	3	3	
	380 V-440 V	0,75	3	3		3	3	3,7	3,7			
		500 V	-	-	-	3	3	4	4			
		660 V-690 V	-	-	-	3	3	3,7	3,7			
AC-4	Direct-on-line starting, reversing, plugging and inching	3 phase	220 V-240 V	kW	0,37	0,55	0,55	0,55	0,55	1,5	1,5	
		3 pole	380 V-440 V		0,55	1,5	1,5	1,5	1,5	3	3	
			500 V		-	1,5	1,5	1,5	1,5	3	3	
			660 V-690 V	-	1,5	1,5	1,5	1,5	3	3		
			1 phase	110 V	kW	0,15	0,3	0,3	0,3	0,3	0,45	0,45
		2 pole	220 V-240 V	0,25		0,75	0,75	0,75	0,75	1,1	1,1	
	380 V-440 V	0,5	1,5	1,5		1,5	1,5	2,2	2,2			
AC-23A	Frequent switching of motors or other high inductive loads	3 phase	220 V-240 V	kW	1,8	3,7	3,7	3,7	3,7	5,5	5,5	
		3 pole	380 V-440 V		3	7,5	7,5	7,5	7,5	11	11	
			500 V		-	7,5	7,5	7,5	7,5	11	11	
			660 V-690 V	-	7,5	7,5	7,5	7,5	11	11		
			1 phase	110 V-120 V	kW	0,37	0,75	0,75	0,75	0,75	1,5	1,5
		2 pole	220 V-240 V	0,75		2,5	2,5	2,5	2,5	3	3	
	380 V-440 V	1,1	3,7	3,7		3,7	3,7	5,5	5,5			
		500 V	-	-	-	4	4	5,5	5,5			
		660 V-690 V	-	-	-	4	4	5,5	5,5			
<b>Ratings</b>	Standard motor load DOL-Rating (similar AC-3)	3 phase	110 V-120 V	HP	0,75	1,5	1,5	1,5	1,5	2	2	
		3 pole	220 V-240 V		1	1	3	3	3	5	5	
			440 V-600 V		-	-	5	5	5	10	10	
			1 phase	110 V-120 V	HP	0,33	0,5	0,5	0,5	0,5	1	1
		2 pole	220 V-240 V	0,75		1	1	1	1	2	2	
			277 V	0,75		1	2	2	2	3	3	
			440 V-600 V	-	-	2	2	2	5	5		
	Heavy motor load Reversing-Rating (similar AC-4)	3 phase	110 V-120 V	HP	-	0,5	0,5	0,5	0,5	1	1	
		3 pole	220 V-240 V		-	1	1	1	1	2	2	
			440 V-600 V		-	-	3	3	3	5	5	
			1 phase	110 V-120 V	HP	-	0,17	0,17	0,17	0,17	0,33	0,33
		2 pole	220 V-240 V	-		0,5	0,5	0,5	0,5	0,75	0,75	
		277 V	-	0,5		0,5	0,6	0,6	1	1		
		440 V-600 V	-	-	-	1,5	1,5	2	2			
<b>Max. Permissible Wire Gage</b>	Single-core or stranded wire	mm <sup>2</sup>		mm <sup>2</sup>	2x1,5	2x2,5	2x2,5	2x4		2x4		
		AWG	2x14		2x12	2x12	2x10		2x10			
	Flexible wire (sleeving in accordance with DIN 46228)	mm <sup>2</sup>		mm <sup>2</sup>	2x1,5(-)	2x2,5(2,5)	2x2,5(2,5)	2x2,5(2,5)		2x2,5(2,5)		
		AWG	2x16		2x14	2x14	2x12		2x12			
	Connection with insulated ring and fork type terminals	Internal diameter	mm		mm				≥3,6		≥3,6	
		External diameter	mm		mm				≤8,6		≤8,6	
Connection with quick connect terminations		mm		mm				6,3		6,3		

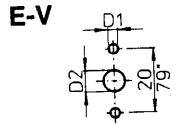
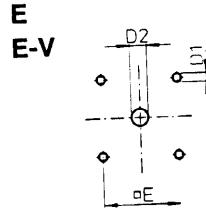
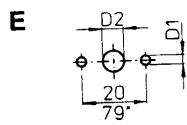
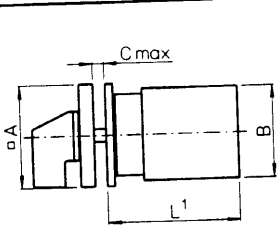
# Technical Data

# CG, CH, CHR Switches

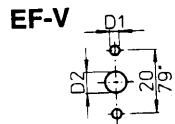
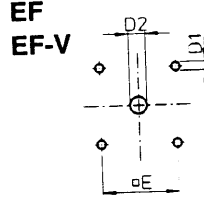
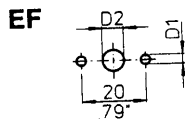
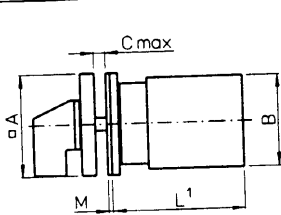
<b>Selection Data</b>	CGD4-1	CH11	CHR11	CH12	CHR12
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<b>Rated Insulation Voltage <math>U_n</math></b>	IEC 60947-3, EN 60947-3 <sup>1</sup> VDE 0660 part 107 <sup>1</sup>	V	440	600	600	600	600
	North America	V	300	300	300	300	300
	min. voltage	V			on request		
<b>Rated Impulse Withstand Voltage <math>U_{imp}</math></b>					on request		
<b>Rated Thermal Current <math>I_{th}</math></b>	IEC 60947-3, EN 60947-3 VDE 0660 part 107	A	5	6	6	6	6
	North America	A	5	6	6	6	6
<b>Rated Operational Current <math>I_o</math></b>  AC-21A Switching of resistive loads, including moderate overloads	IEC 60947-3, EN 60947-3 VDE 0660 part 107						
	1 V/6 V	A	5/2	6/3	6/3	-/6	-/6
	North America <sup>2</sup> 12 V/24 V	A	1,2/0,7	2/1	2/1	5/5	5/5
	48 V/110 V	A	0,45/0,25	0,8/0,4	0,8/0,4	4/3	4/3
	240 V	A	0,15	0,2	0,2	1,7	1,7
	300 V	A	0,13	0,13	0,13	1,3	1,3
	440 V	A	0,1	0,1	0,1	1	1
	500 V	A	-	0,08	0,08	0,8	0,8
600 V	A	-	0,05	0,05	0,5	0,5	

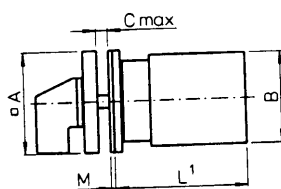
Two or Four Hole Panel Mounting



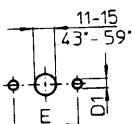
	CG4 CG4-1 CGD4-1	CG6 CG7	CG8 CG9	CH10- CHR16	CH10B- CHR16B
<b>A</b>	30 1.18	30 1.18	48 1.89	48 1.89	64 2.52
<b>B</b>	28 1.10	38 1.50	38 1.50	46 1.81	56 2.20
<b>C</b>	4 .16	4 .16	4 .16	4 .16	4 .16
<b>D1</b>	3,2 .13	3,2 .13	5 .20	5 .20	5 .20
<b>D2</b>	8-11 .31-.43	8-11 .31-.43	8-15 .31-.59	8-15 .31-.59	10-15 .39-.59
<b>E</b>	-	-	36 1.42	36 1.42	48 1.89



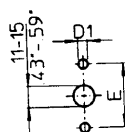
	CG4 CG4-1 CGD4-1	CG6 CG7	CG8 CG9	CH10- CHR16	CH10B- CHR16B
<b>A</b>	30 1.18	30 1.18	48 1.89	48 1.89	64 2.52
<b>B</b>	28 1.10	38 1.50	38 1.50	46 1.81	56 2.20
<b>C</b>	4 .16	4 .16	4 .16	4 .16	4 .16
<b>D1</b>	3,2 .13	3,2 .13	5 .20	5 .20	5 .20
<b>D2</b>	8-11 .31-.43	8-11 .31-.43	15-19 .59-.75	15-19 .59-.75	19-22 .75-.87
<b>E</b>	-	-	36 1.42	36 1.42	48 1.89
<b>M</b>	1 .04	1 .04	1,5 .06	1,5 .06	3 .12



**E22**  
for  
CG  
**E22-V**  
for  
CH/CHR



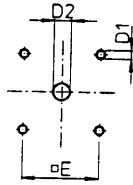
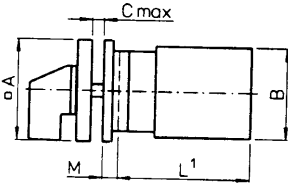
**E22-V**  
for  
CG  
**E22**  
for  
CH/CHR



	CG8 CG9	CH10- CHR16	CH10B- CHR16B
<b>A</b>	48 1.89	48 1.89	64 2.52
<b>B</b>	38 1.50	46 1.81	56 2.20
<b>C</b>	4 .16	4 .16	4 .16
<b>D1</b>	5 .20	5 .20	5 .20
<b>E</b>	30 1.17	30 1.17	-
<b>F</b>	36 1.42	36 1.42	48 1.89
<b>M</b>	1,5 .06	1,5 .06	3 .12

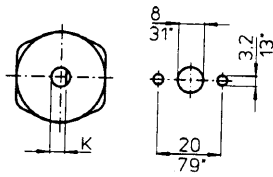
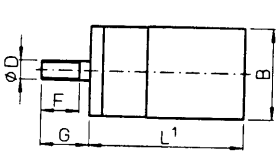
Four Hole Panel Mounting or Mosaic Mounting

EG  
EGF

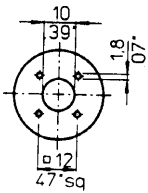
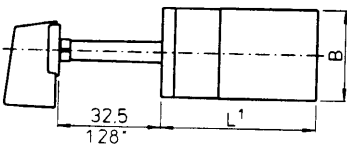


	CG8 CG9	CH10- CHR16
A	64 2.52	64 2.52
B	38 1.50	46 1.81
C	4 .16	4 .16
D1	5 .20	5 .20
EG D2	10-15 .39-.59	10-15 .39-.59
EGF D2	19-22 .75-.87	19-22 .75-.87
E	48 1.89	48 1.89
EG M	7.5 .30	7.5 .30
EGF M	10.5 .41	10.5 .41

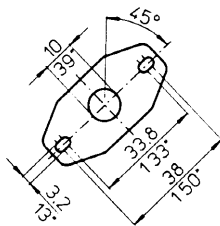
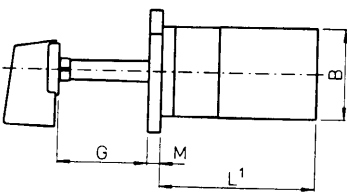
E9  
E91



E92



E93  
E94



CG4  
CG4-1 CG6  
CGD4-1 CG7

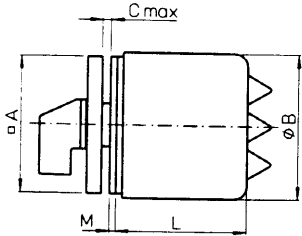
B	28	38
	1.10	1.50

CG4  
CG4-1  
CGD4-1  
CG6  
CG7

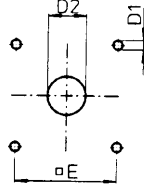
	E9	E91	E92	E93	E94
D	6 .24	6,35 .25	-	-	-
F	12 .47	12,8 .50	-	-	-
G	15,4 .61	17,4 .69	32,5 1,28	28,5 1,12	32,5 1,28
K	4,7 .19	5,5 .22	-	-	-
M	-	-	-	4 .16	-



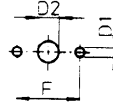
Two or Four Hole Panel Mounting



EC  
ED  
EC1  
ED1



ED22

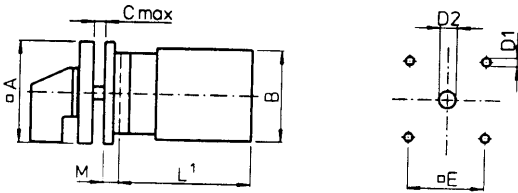


EC/EC1  
ED/ED1/ED22  
EC/EC1  
ED/ED1/ED22  
ED/ED1/ED22  
Stages L

	CG8		CG9		CH10-CHR16		CH10B-CHR16B	
	EC ED	ED22	EC ED	ED22	EC ED	ED22	EC ED	EC1 ED1
<b>A</b>	48 1.89	48 1.89	48 1.89	48 1.89	64 2.52	48 1.89	64 2.52	64 2.52
<b>B</b>	50 1.97	74 2.91	50 1.97	74 2.91	68 2.68	74 2.91	68 2.68	74 2.91
<b>C</b>	4 .16	-	4 .16	-	4 .16	-	4 .16	4 .16
<b>C</b>	2 .08	4 .16	2 .08	4 .16	2 .08	4 .16	4 .16	4 .16
<b>D1</b>	5 .20	5 .20	5 .20	5 .20	5 .20	5 .20	5 .20	5 .20
<b>D2</b>	8-15 .31-.59	-	8-15 .31-.59	-	8-15 .31-.59	-	10-15 .39-.59	10-15 .39-.59
<b>D2</b>	18-22 .71-.87	11-15 .43-.59	18-22 .71-.87	11-15 .43-.59	18-22 .71-.87	11-15 .43-.59	22-25 .87-.98	19-22 .75-.87
<b>E</b>	36 1.42	-	36 1.42	-	48 1.89	-	48 1.89	48 1.89
<b>F</b>	-	30 1.17	-	30 1.17	-	30 1.17	-	-
<b>M</b>	2 .08	1.5 .06	2 .08	1.5 .06	2 .08	1.5 .06	2 .08	3 .12
<b>1</b>	53.5 2.10	74.3 2.93	53.5 2.10	74.3 2.93	-	74.3 2.93	-	72.7 2.86
<b>2</b>	53.5 2.10	74.3 2.93	67.5 2.66	74.3 2.93	-	74.3 2.93	-	72.7 2.86
<b>3</b>	67.5 2.66	94.3 3.71	81.5 3.21	94.3 3.71	-	94.3 3.71	-	92.7 3.65
<b>4</b>	81.5 3.21	94.3 3.71	-	94.3 3.71	103 4.06	94.3 3.71	103 4.06	-
<b>5</b>	-	94.3 3.71	-	-	-	-	114.5 4.51	-
<b>6</b>	-	-	-	-	-	-	127 5.00	-
<b>7</b>	-	-	-	-	-	-	152 5.98	-
<b>8</b>	-	-	-	-	-	-	164.5 6.48	-
<b>9</b>	-	-	-	-	-	-	177 6.97	-
<b>10</b>	-	-	-	-	-	-	-	-

Four Hole Panel Mounting or Single Hole Mounting

KN1  
KD1  
KN2

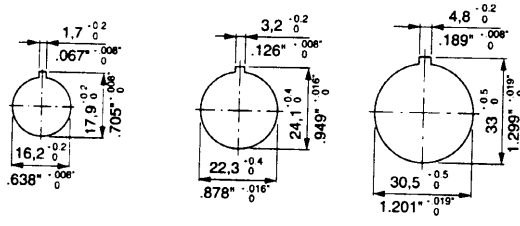
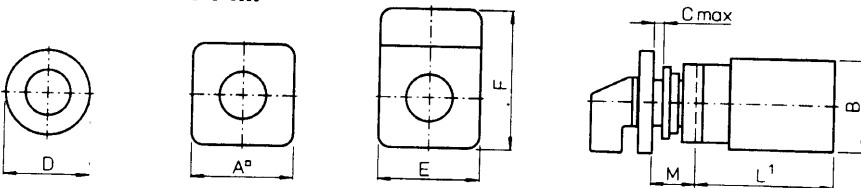


	KN2		KN1			
	CG8 CG9	CH10- CHR16	KD1	CG8 CG9	CH10- CHR16	CH10B- CHR16B
A	48 1.89	48 1.89	64 2.52	64 2.52	64 2.52	
B	38 1.50	46 1.81	38 1.50	46 1.81	56 2.20	
C	4 .16	4 .16	4 .16	4 .16	4 .16	
D1	5 .20	5 .20	5 .20	5 .20	5 .20	
D2	8-15 .31-.59	8-15 .31-.59	10-15 .39-.59	10-15 .39-.59	10-15 .39-.59	
E	36 1.42	36 1.42	48 1.89	48 1.89	48 1.89	
M	7 .28	7 .28	6.5 .26	6.5 .26	8 .31	

FS1...  
FT1...  
FT3...

FH3...  
FS2...  
FT2...  
FT4...

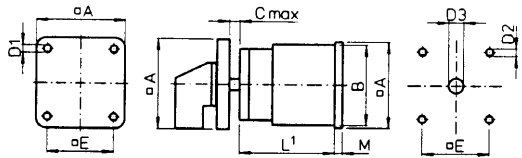
FS4  
FS4-V



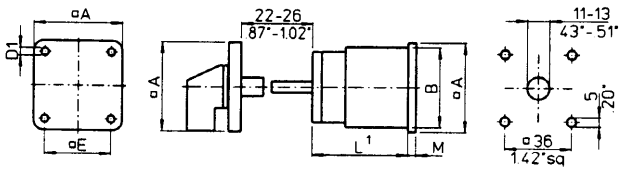
	CG4			
	CG4-1 CGD4-1	CG6 CG7	CG8 CG9	CH10- CHR16
A/E	30 1.18	30 1.18	49 1.93	49 1.93
FH3...	-	-	64 2.52	64 2.52
B	28 1.10	38 1.50	38 1.50	46 1.81
C	5 .20	5 .20	6 .24	6 .24
D	29.5 1.16	29.5 1.16	39 1.54	39 1.54
F	39 1.54	39 1.54	-	-
M	12.5 .49	12.5 .49	20 .79	20 .79
FH3...	-	-	27 1.07	27 1.07

Base Mounting

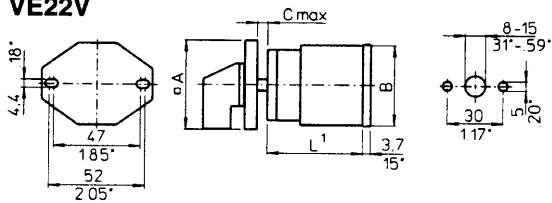
VE  
VE-V



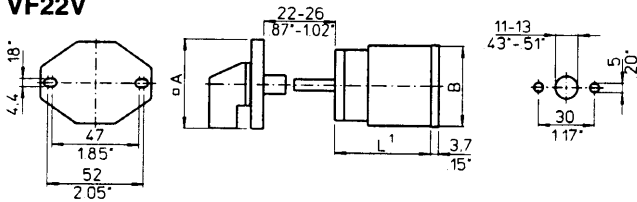
VF  
VF-V



VE22  
VE22V



VF22  
VF22V

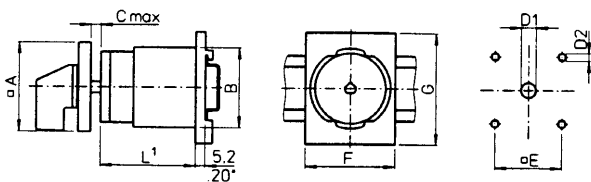


CG8 CH10-  
CG9 CHR16

A <sup>2</sup>	48 1.89	48 (64) 1.89 (2.52)
B	38 1.50	46 1.81
C	10,5 .41	10,5 .41
D1	4,1 .16	4,1 .16
D2	5 .20	5 .20
D3	8-15 .31-.59	8-15 .31-.59
E <sup>2</sup>	36 1.42	36 (48) 1.42 (1.89)
M	4 .16	7 .28

<sup>2</sup>Dimensions in ( ) for revertive mounting plate

VE1



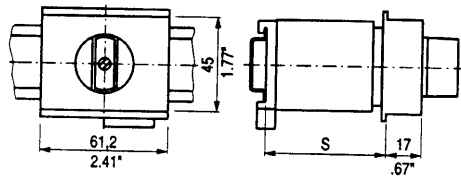
CG8 CH10-  
CG9 CHR16

A	48 1.89	48 1.89
B	38 1.50	46 1.81
C	10,5 .41	10,5 .41
D1	5 .20	5 .20
D2	8-15 .31-.59	8-15 .31-.59
E	36 1.42	36 1.42
F	48 1.89	48 1.89
G	60 2.36	60 2.36

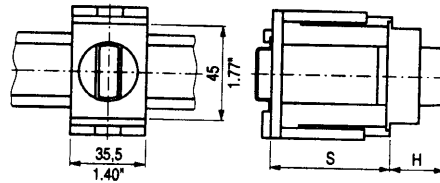
<sup>1</sup>see page 43

Base Mounting and Escutcheon Plates

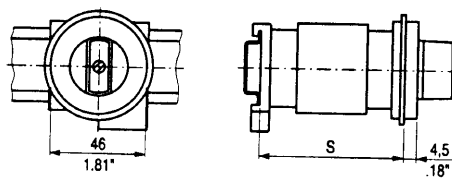
VE2



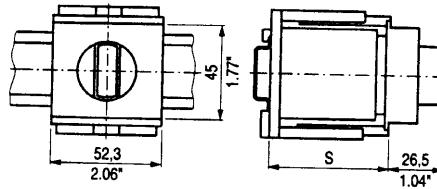
VE21  
for CG4-CGD4-1



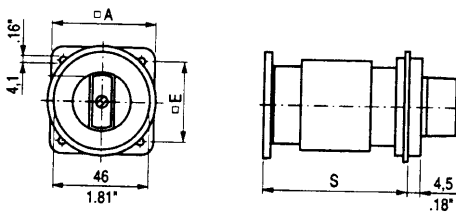
VE3



VE21  
for CG8-CHR16

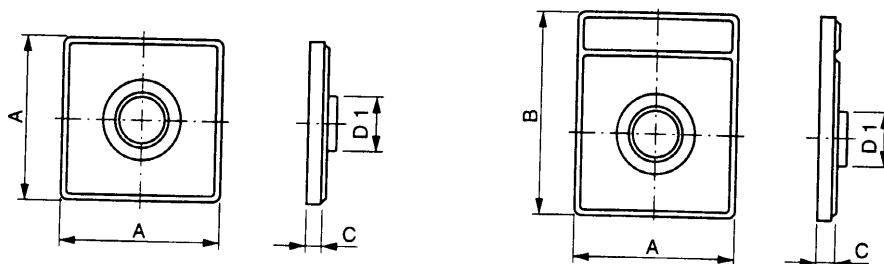


VE4



	VE2			VE3			VE4			H	VE21				
	CG8	CG9	CH10-CHR16	CG8	CG9	CH10-CHR16	CG8	CG9	CH10-CHR16		CG4-CGD4-1	CG8	CG9	CH10-CHR16	
S	Max. no. of stages			Max. no. of stages			Max. no. of stages				Max. no. of stages				
S = 46 1.81	1	1	1	-	-	-	1	-	-	S = up to 44 1.73	21 .83	1	1	1	1
S = 50 1.97	2	1	2	1	-	1	1	1	-	S = 46 1.81	26.5 1.04	2	2	-	-
S = 61 2.40	3	2	2	2	1	1	2	1	1	S = 50 1.97	-	-	-	-	2
S = 67 2.64	3	2	3	2	2	2	2	2	2	S = 54 2.13	-	-	-	2	-
S = 69 2.70	3	2	3	2	2	2	2	2	2	S = 60 2.36	-	-	3	-	-
A							48 1.89	48 1.89	64 2.52	S = 62 2.44	26.5 1.04	3	-	-	-
E							36 1.42	36 1.42	48 1.89	S = 64 2.52	-	-	-	-	3
										S = 72 2.83	-	-	4	4	-

Escutcheon plates for mounting E, EF, EG, EGF, KN1, KD1, KN2, EC, EC1, ED, ED1, VE, VE1, VF



Size	A	B	C	D
S00	30 1.18	39 1.54	5.5 .22	13.6 .54
S0	48 1.89	60 2.36	6.3 .25	16 .65
S1	64 2.52	78.8 3.10	7 .28	21.8 .86

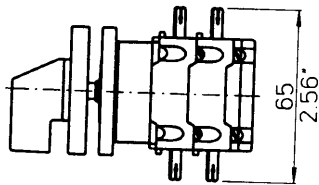
**Dimensions**      mm  
                              inch

**Additional Lengths**

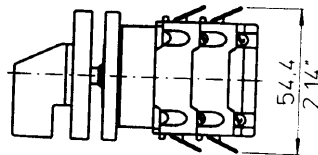
**Additional lengths for amendment (page 4)**

	CG8 CG9	CH10 CH16	CHR10 CHR16
<b>B</b>	6,2 .24	6,2 .24	6,2 .24
<b>S</b>	14,3 .56	14,3 .56	14,3 .56
<b>L, M</b>	24,8 .98	24,8 .98	24,8 .98
<b>X</b>	23,3 .92	23,3 .92	23,3 .92

**Quick connect terminations (plug 2,8 mm or 6,35 mm) for CHR switches (page 4)**



with quick connects



with angled quick connects

**Length L**

Stages	CG4 CG4-1 CGD4-1	CG6	CG7	CG8	CG9	CH10 CH11 CH12 CH16	CHR10 CHR11 CHR12 CHR16	CH10B CH16B	CHR10B CHR16B
<b>1</b>	38,5 1.52	39,7 1.56	43,5 1.71	38,9 1.53	42,7 1.68	41,7 1.64	41,7 1.64	47,9 1.89	47,9 1.89
<b>2</b>	50,5 1.99	52,4 2.06	60 2.36	51,6 2.03	59,2 2.33	55,7 2.19	55,7 2.19	61,9 2.44	61,9 2.44
<b>3</b>	62,5 2.46	65,1 2.56	76,5 3.01	64,3 2.53	75,7 2.98	69,7 2.74	69,7 2.74	75,9 2.99	75,9 2.99
<b>4</b>	74,5 2.93	77,8 3.06	93 3.66	77 3.03	92,2 3.63	83,7 3.30	83,7 3.30	89,9 3.54	89,9 3.54
<b>5</b>	86,5 3.41	-	-	89,7 3.53	108,7 4.28	97,7 3.85	97,7 3.85	103,9 4.09	103,9 4.09
<b>6</b>	98,5 3.88	-	-	102,4 4.03	125,2 4.93	111,7 4.40	111,7 4.40	117,9 4.64	117,9 4.64
<b>7</b>	110,5 4.35	-	-	115,1 4.43	141,7 5.58	125,7 4.95	125,7 4.95	131,9 5.19	131,9 5.19
<b>8</b>	122,5 4.82	-	-	127,8 5.03	158,2 6.23	139,7 5.50	139,7 5.50	145,9 5.74	145,9 5.74
<b>9</b>	-	-	-	140,5 5.53	174,7 6.88	153,7 6.05	153,7 6.05	159,9 6.30	159,9 6.30
<b>10</b>	-	-	-	153,2 6.03	191,2 7.53	167,7 6.60	167,7 6.60	173,9 6.85	173,9 6.85
<b>11</b>	-	-	-	165,9 6.53	207,7 8.18	181,7 7.15	181,7 7.15	187,9 7.40	187,9 7.40
<b>12</b>	-	-	-	178,6 7.03	224,2 8.83	195,7 7.70	195,7 7.70	201,9 7.95	201,9 7.95